

REMARKS

Applicant's remarks, below, are preceded by quotations of related comments of the examiner in small, boldface type.

3. Claims 12-16 are rejected under 35 U. S. C. 103(a) as being unpatentable over Nakano et al. (U. S. Patent Number 4,535,732; hereinafter referred to as Nakano), and further in view of Zagone (U. S. Patent Number 6,434,476). Nakano discloses a valve disabling device for internal combustion engines. Specifically, in regard to claim 12, as seen in figure 11, Nakano discloses an apparatus comprising:

A coupling having two open ends adapted for connection to upstream and downstream tubes of a pulsating oil circulation system of an engine and a channel configured to direct oil to flow past a temperature sensor (35) connected to a sensing circuit (134), the sensing circuit comprising elements connected to determine a change in a voltage across the temperature sensor at to compare the change to a threshold. Nakano discloses the structure, as seen in figure 11 and described in column 12 lines 10-52, of the claim with a coupling with a means for transporting oil across the temperature sensor. However, some of the specifics of the sensing circuit are not clearly disclosed in the Nakano reference.

Zagone, however, discloses a high voltage fault discrimination for EGR an EGR temperature sensor. Specifically with respect to the sensing circuit of claim 12 of the application, claim 8 of the Zagone reference discloses a system comprising an oil temperature sensor in communication with the engine control module (ECM) wherein the ECM converts the signal of the oil temperature sensor to corresponding digital values, compares those value to a programmable threshold (see claim 8). The motivation to combine the teaching of Zagone with the teachings of Nakano is that the Zagone method of oil temperature sensing would be an improvement over the previously disclosed method of Nakano and the sensing method of Zagone would provide a more accurate reading method than that disclosed by Nakano.

In regard to claims 13 and 14, though a sample and hold circuit and a delay circuit are not specifically disclosed, a voltage value storage means is disclosed and this is a design choice that does not depart from the spirit of the invention disclosed in the references. Also, a means for counting is disclosed whereby the number of counts serves as a timing means for the circuit (see column 5 lines 30-35).

In regard to claim 15, Zagone specifically discloses the use of an analog to digital controller (see column 5 lines 30-35).

In regard to claim 16, though these ports are not specifically disclosed, these are design choices for the ECM that would be obvious to one of ordinary skill in the art to incorporate depending on the application of the user.

The applicant has amended claim 12 to make clear that the sensing circuit generates a flow-state signal based on the comparison for use by a control circuit of the engine. Neither

Applicant : Eric K. Larson
Serial No. : 10/042,525
Filed : October 19, 2001
Page : 6 of 6

Attorney's Docket No.: 04513-023001

Nakano nor Zagone, alone or together, describes or suggests generating a flow-state signal for use by a control circuit of the engine. Both of the references are concerned instead with temperature sensing.